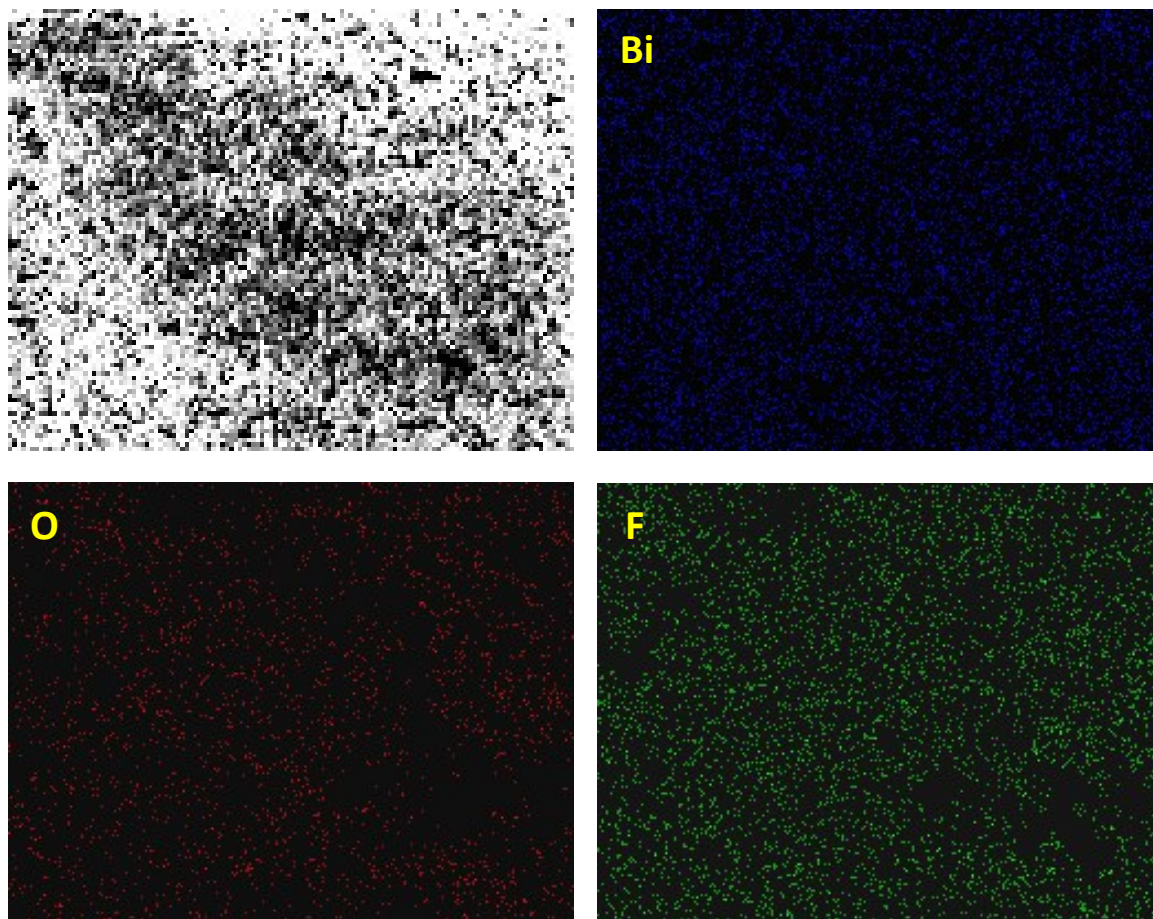
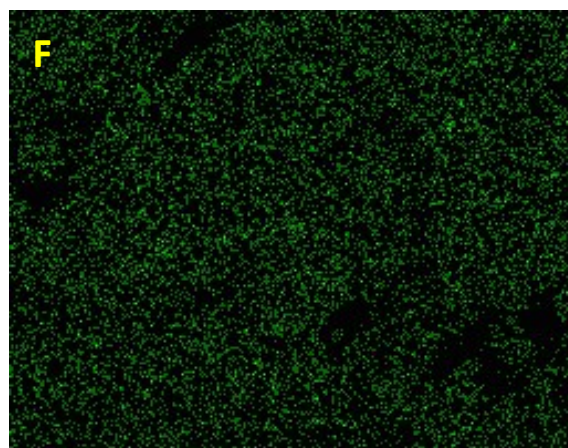
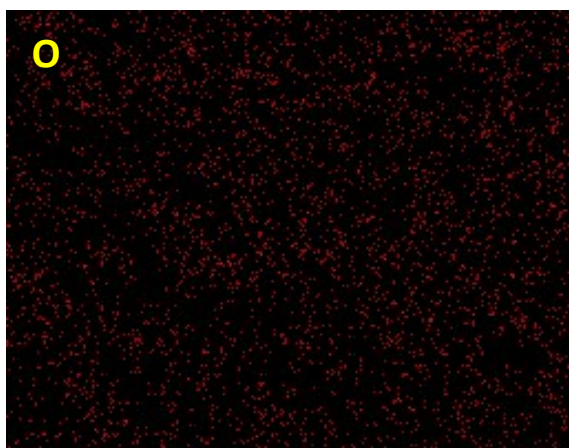
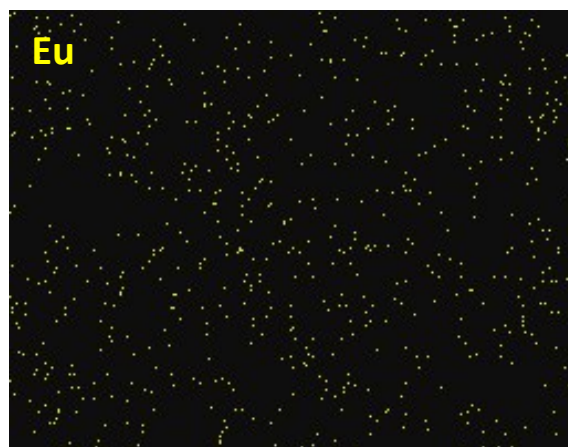
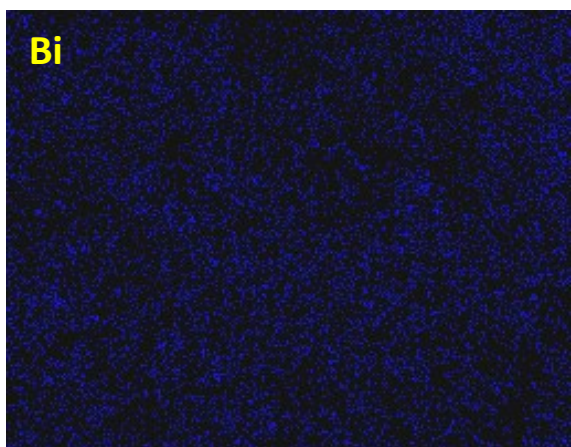


Fig. S1. Crystal structure of tetragonal BiOF compound.



**Fig. S2.** Elemental mapping of BiOF compound.



**Fig. S3.** Elemental mapping of Bi<sub>0.95</sub>Eu<sub>0.05</sub>OF compound.

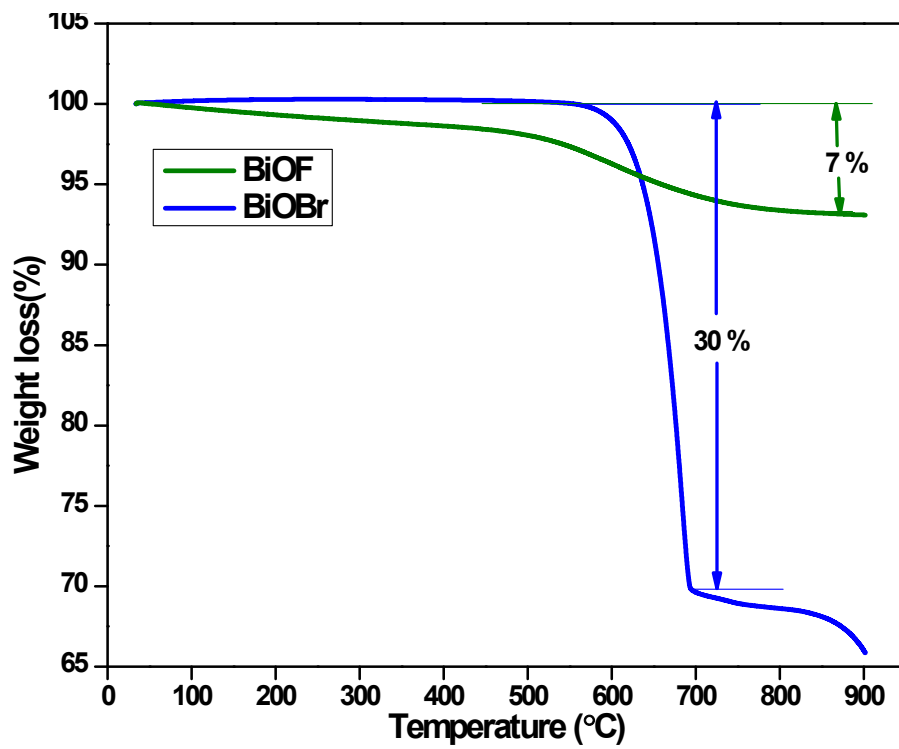


Fig. S4. TGA curve of BiOF and BiOBr compounds.

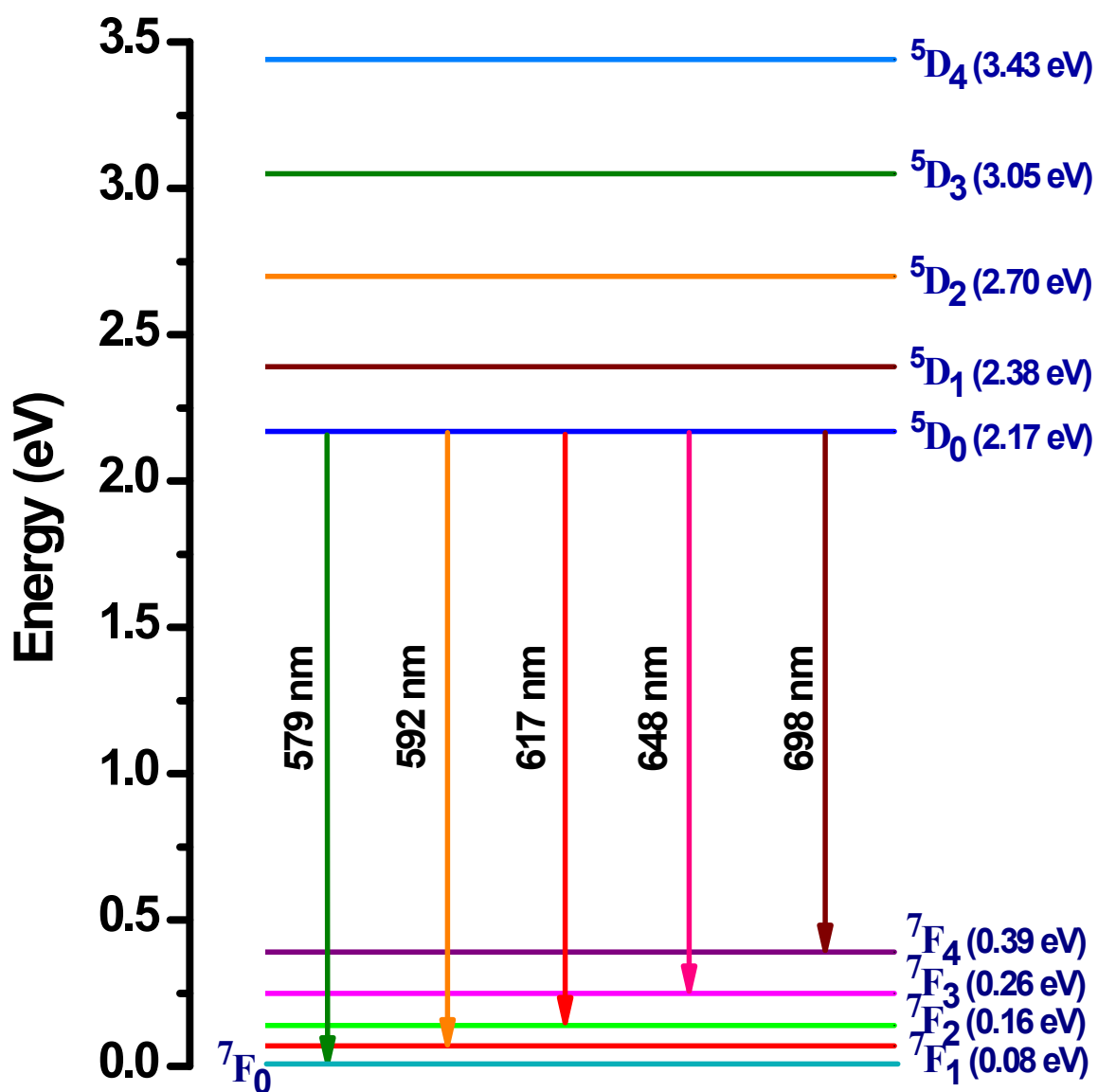
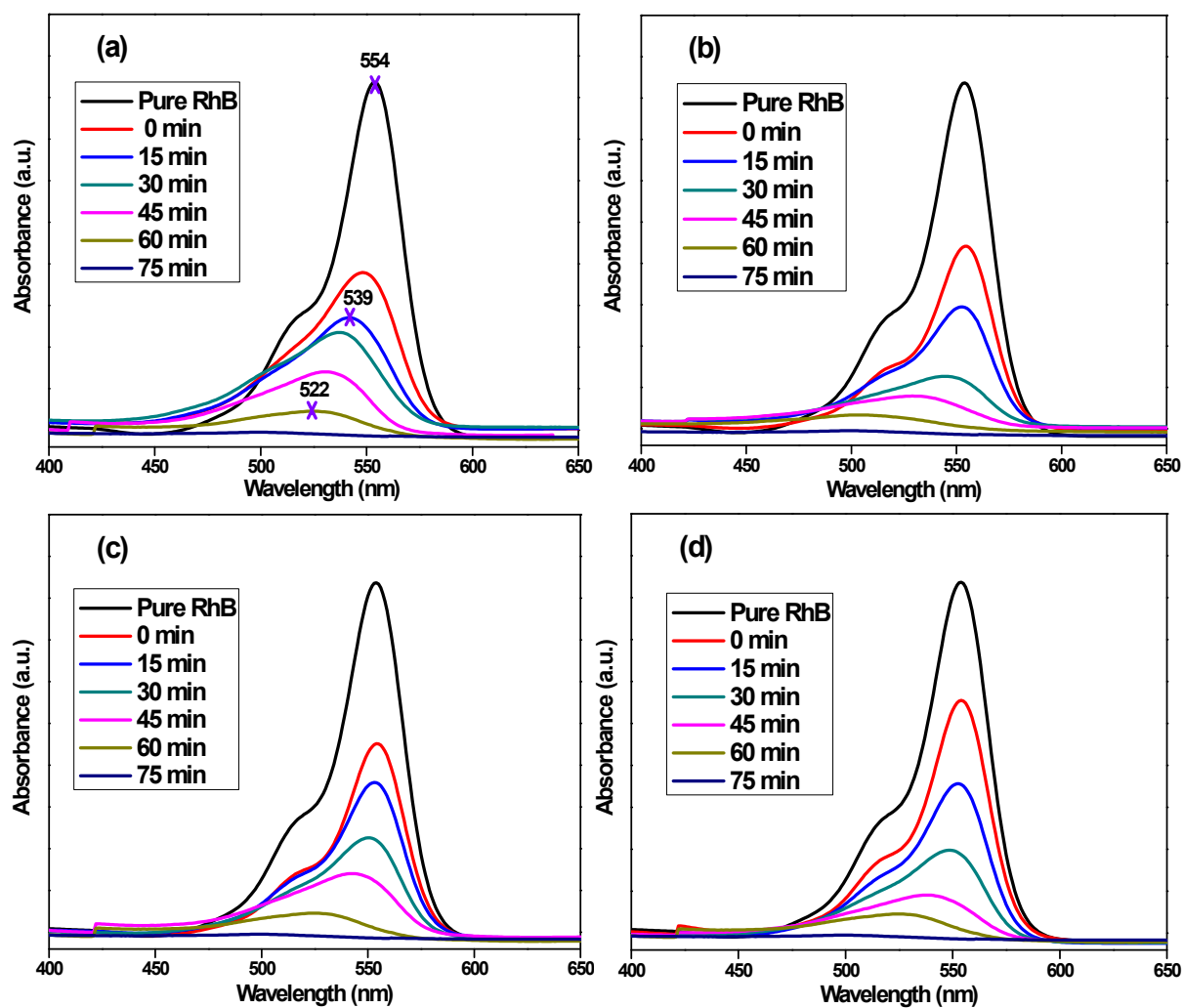
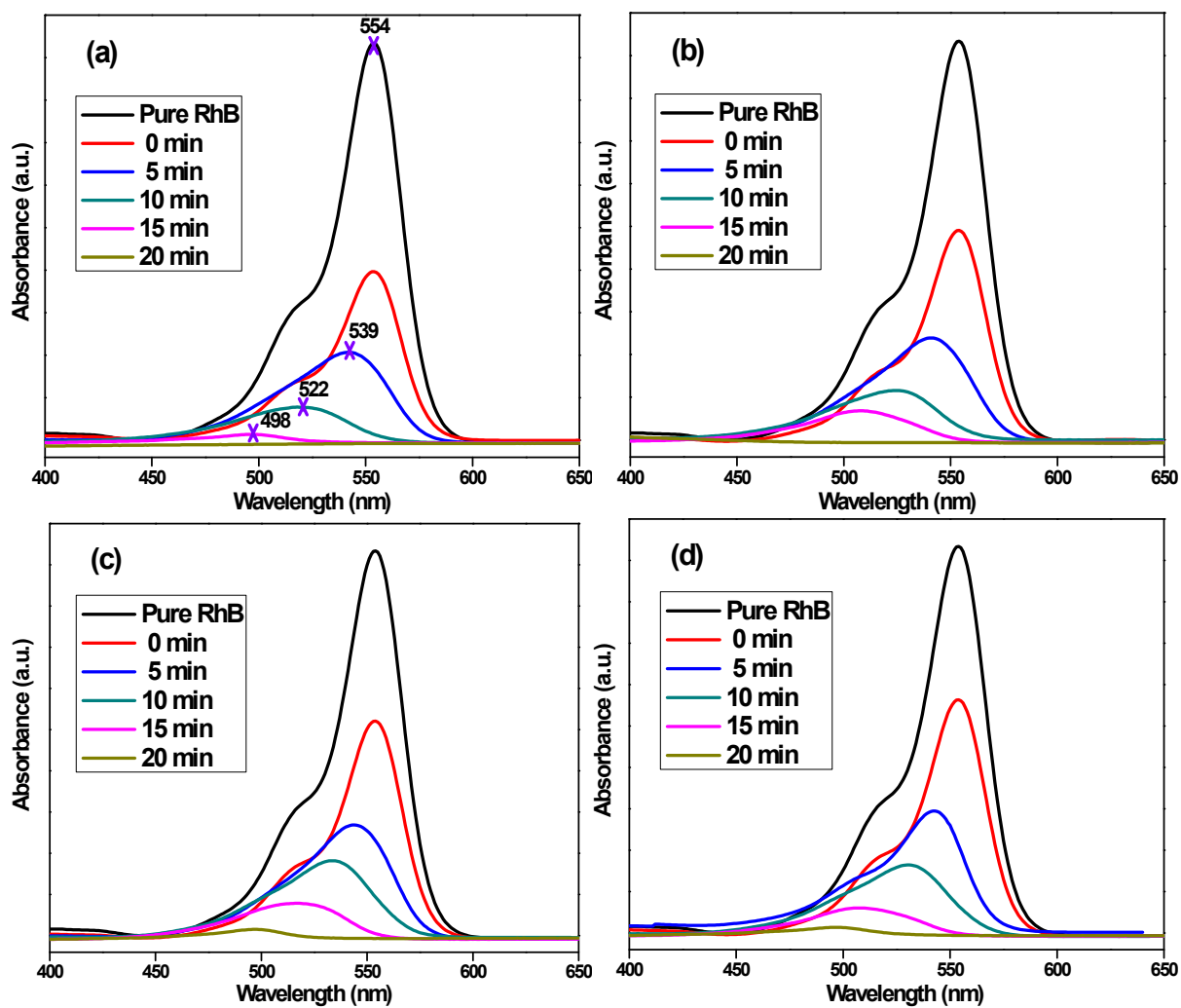


Fig. S5. Energy level diagram illustrating the electronic transitions in  $\text{Bi}_{1-x}\text{Eu}_x\text{OF}$  phosphors.



**Fig. S6.** UV-Vis absorbance spectra of RhB dye as a function of time over (a) BiOF, (b)  $\text{Bi}_{0.99}\text{Eu}_{0.01}\text{OF}$ , (c)  $\text{Bi}_{0.97}\text{Eu}_{0.03}\text{OF}$  and (d)  $\text{Bi}_{0.95}\text{Eu}_{0.05}\text{OF}$  catalysts under visible illumination.



**Fig. S7.** UV-Vis absorbance spectra of RhB dye as a function of time over (a) BiOBr, (b) Bi<sub>0.99</sub>Eu<sub>0.01</sub>OBr, (c) Bi<sub>0.97</sub>Eu<sub>0.03</sub>OBr and (d) Bi<sub>0.95</sub>Eu<sub>0.05</sub>OBr catalysts under visible illumination.